

Form PTO-1449 (modified)

Atty. Docket No.

AMBI:055US/MBW

Serial No.

09/613,535

List of Patents and Publications for Applicant's

Applicant

George L. Murphy, Robert A. Setterquist and Andrew D. Ellington

INFORMATION DISCLOSURE STATEMENT

Filing Date:

July 10, 2000

Group:

Unknown

(Use several sheets if necessary)

U.S. Patent Documents

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Other Art

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## U.S. Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Name	Class	Sub Class	Filing Date of App.
as	A4	5,723,323	3/3/98	Kauffman <i>et al.</i>	435	172.3	12/2/94
	A5	5,965,408	12/12/99	Short	435	91.1	7/9/96
	A6	6,117,679	9/12/00	Stemmer	435	440	3/25/96
	A7	6,132,970	10/17/00	Stemmer	435	6	6/19/98
	A8	6,165,793	12/26/00	Stemmer	435	440	5/8/98
	A9	6,177,263 B1	1/23/01	Arnold <i>et al.</i>	435	91.1	7/14/99
as	A10	6,180,406 B1	1/30/01	Stemmer	435	440	6/17/98

## Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No

## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation

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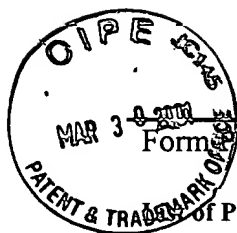
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	A2	6,159,687	12-12-00	Vind	435	6	03-18-98
AS	A3	6,177,263 B1	01-23-01	Arnold <i>et al.</i>	435	91.1	07-14-99

## Foreign Patent Documents

Exam. Init.	Ref. Des.	Document Number	Date	Country	Class	Sub Class	Translation Yes/No
AS	B1	WO 98/05765	02-12-98	PCT			
	B2	WO 98/32845	07-30-98	PCT			
	B3	WO 98/41622	09-24-98	PCT			
	B4	WO 98/41623	09-24-98	PCT			
	B5	WO 98/42832	10-01-98	PCT			
	B6	WO 98/58080	12-23-98	PCT			
	B7	WO 99/15698	04-01-99	PCT			
	B8	WO 99/20768	04-29-99	PCT			
	B9	WO 99/29882	06-17-99	PCT			
AS	B10	WO 99/47536	09-23-99	PCT			

## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
AS	C1	Altschul <i>et al.</i> , "Basic Local Alignment Search Tool," <i>J. Mol. Biol.</i> 215:403-410, 1990.
	C2	Ambrose <i>et al.</i> , "DNA Sequencing: Chemical Methods," 152:522-538, 1987.
AS	C3	Arkin, <i>et al.</i> , "An algorithm for protein engineering: Simulations of recursive ensemble mutagenesis," <i>PNAS USA</i> 89:7811-7815, 1992.

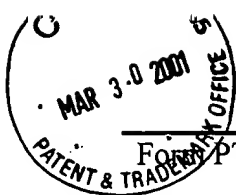
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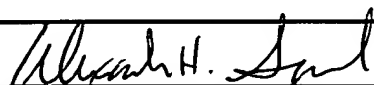
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**Other Art (Including Author, Title, Date Pertinent Pages, Etc.)**

Exam. Init.	Ref. Des.	Citation
	C4	Barcak, et al., "A method for unidirectional deletion mutagenesis with application to nucleotide sequencing and preparation of gene fusions," <i>Gene</i> , 49:119-128, 1986.
	C5	Breaker et al., "Self-Incorporation of Coenzymes by Ribozymes," <i>J. Mol. Evol.</i> , 40:551-558, 1995.
	C6	Caldwell and Joyce, "Mutagenic PCR," <i>PCR Methods and Applications</i> , 3:S136-S140, 1994.
	C7	Carbonelli et al., "A placid vector for isolation of strong promoters in <i>Eschirichia coli</i> ," <i>FEMS Microbiol Lett.</i> , 177:75-82, 1999.
	C8	Chandler et al., "RNA splicing specificity determined by the coordinated action of RNA recognition motifs in SR proteins," <i>Proc Natl Acad Sci U S A.</i> , 94:3596-3601, 1997.
	C9	Chang et al., "Evolution of a cytokine using DNA family shuffling," <i>Nature Biotechnology</i> , 17:793-797, 1999.
	C10	Chapman and Szostak, "Isolation of a ribozyme with 5'-5' ligase activity," <i>Chem Biol.</i> 2:325-333, 1995.
	C11	"Light based scissors cleave DNA," <i>Chemical and Engineering News</i> , Sept. 13, p 40, 1999.
	C12	Chen and Okayama, "High-Efficiency Transformation of Mammalian Cells by Plasmid DNA," <i>Mol. Cell. Biol.</i> , 7:2745-2752, 1987.
	C13	Chowrira et al., "In Vitro and in Vivo Comparison of Hammerhead, Hairpin, and Hepatitis Delta Virus Self-processing Ribozyme Cassettes," <i>J. Biol. Chem.</i> , 269:25856-25864, 1994.
	C14	Coccea, "Duplication of a Region in the Multiple Cloning Site of a Plasmid Vector to Enhance Cloning-Mediated Addition of Restriction Sites to a DNA Fragment," <i>Biotechniques</i> , 23:814-816, 1997.
	C15	Crameri et al., "DNA shuffling of a family of genes from diverse species accelerates directed evolution," <i>Nature</i> , 391:288-291, 1998.
	C16	Crameri et al., "Improved Green Fluorescent Protein by Molecular Evolution Using DNA Shuffling," <i>Nature Biotechnology</i> , 14:315-319, 1996.
	C17	<i>Current Protocols in Molecular Biology</i> . Ed. F. M. Ausubel et al., Volume 1, 1996. <i>Table of Contents</i>
	C18	Eun, "Enzymology Primer for Recombinant DNA Technology," <i>Academic Press</i> , 3:215-220, 1996.

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## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
AS	C19	Fechheimer et al., "Transfection of mammalian cells with plasmid DNA by scrape loading and sonication loading," <i>Proc. Natl. Acad. Sci., USA</i> 84:8463-8467, 1987.
	C20	Foder et al., "Light-Directed, Spatially Addressable Parallel Chemical Synthesis," <i>Science</i> , 251:767-773, 1991.
	C21	Fraley and Fomari Kaplan, "Entrapment of a bacterial plasmid in phospholipid vesicles: Potention for gene transfer," <i>Proc. Nat'l. Acad. Sci. USA</i> , 76:3348-3352, 1979.
	C22	Gish and Eckstein, "DNA and RNA sequencing utilizing <u>phosphorothioate</u> chemistry," <i>NAR Symp. Ser.</i> , 8:253-256, 1987.
	C23	Gopal, "Gene Transfer Method for Transicnt Gene Expression, Stable Transformation, and Cotransformation of Suspension Cell Cultures," <i>Mol. Cell. Biol.</i> , 5:1188-1190, 1985.
	C24	Graham and Van Der Eb, "A New Technique for the Assay of Infectivity of Human Adenovirus 5 DNA," <i>Virology</i> , 52:456-467, 1973.
	C25	Kaeppler et al., "Silicon carbide fiber-mediated DNA delivery into plant cells," <i>Plant Cell Reports</i> , 9: 415-418, 1990.
	C26	Kaneda et al., "Increased Expression of DNA Cointroduced with Nuclear Protein in Adult Rat Liver," <i>Science</i> , 243:375-378, 1989.
	C27	Kato et al., "Expression of Hepatitis B Virus Surface Antigen in Adult Rat Liver," <i>J. Biol. Chem.</i> , 266:3361-3364, 1991.
	C28	Labeit et al., "A New Method of DNA Sequencing Using Deoxynucleoside $\alpha$ -Thiotriphosphates," <i>DNA</i> 5:173-177, 1986.
	C29	Lee et al., "Ribozyme-catalyzed tRNA aminoacylation," <i>Nat Struct Biol.</i> , 7:28-33, 2000.
	C30	Leung et al., "A Method for Random Mutagenesis of a Defined DNA Segment Using a Modified Polymerase Chain Reaction," <i>Technique</i> , 1:11-15, 1989.
	C31	Lieber and Strauss, "Selection of Efficient Cleavage Sites in Target RNAs by Using a Ribozyme Expression Library," <i>Mol. Cell. Biol.</i> , 15:540-551, 1995.
AS	C32	Lohse and Szostak, "Ribozyme-catalysed amino-acid transfer reactions," <i>Nature</i> . 30:381:442-444, 1996.

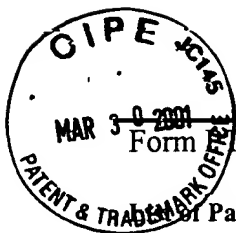
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Exam. Init.	Ref. Des.	Citation
ad	C33	Longo et al., "Use of uracil DNA glycosylase to control carry-over contamination in polymerase chain reactions," <i>Gene</i> , 93:125-128, 1990.
	C34	Lorsch and Szostak, "Kinetic and Thermodynamic Characterization of the Reaction Catalyzed by a Polynucleotide Kinase Ribozyme," <i>Biochemistry</i> , 34:15315-15327, 1995.
	C35	Macejak and Sarnow, "Internal initiation of translation mediated by the 5' leader of a cellular mRNA," <i>Nature</i> , 353:90-94, 1990.
	C36	Maxam and Gilbert, "Sequencing End-Labeled DNA with Base-Specific Chemical Cleavages," <i>Methods Enzymology</i> , 65:499-560, 1980.
	C37	Messing and Vieira, "A new pair of M13 vectors either DNA strand of double-digest restriction fragments," <i>Gene</i> , 19:269-276, 1982.
	C38	Moore and Arnold, "Directed evolution of a <i>para</i> -nitrobenzyl esterase for aqueous-organic solvents," <i>Nature Biotechnology</i> , 14:458-467, 1996.
	C39	Moore et al., "Strategies for the <i>in vitro</i> Evolution of Protein Function: Enzyme Evolution by Random Recombination of Improved Sequences," <i>J. Molecular Biol.</i> , 272:336-347, 1997.
	C40	Nicolau and Sene, "Liposome-Mediated DNA Transfer in Eukaryotic Cells," <i>Biochem. Biophys. Acta</i> , 721:185-190, 1982.
	C41	Nicolau et al., "Liposomes as Carriers for <i>in Vivo</i> Gene Transfer and Expression," 149:157-176, 1987.
	C42	Nixon et al., "Hybrid enzymes: manipulating enzyme design," <i>Trends in Biotech.</i> , 16:258-264, 1989.
	C43	Ohuchi et al., " <i>In vitro</i> method for the generation of protein libraries using PCR amplification of a single DNA molecule and coupled transcription/translation," <i>NAR</i> , 26:4339-4346, 1998.
	C44	Oliphant, et al., "Cloning of random-sequence oligodeoxynucleotides," <i>Gene</i> , 44:177-183, 1986.
	C45	Ostermeier et al., "A combinatorial approach to hybrid enzymes independent of DNA homology," <i>Nature Biotechnology</i> , 17:1205-1209, 1999.
ad	C46	Ostermeier et al., "Combinatorial protein engineering by incremental truncation," <i>PNAS</i> , 96:3562-3567, 1999.

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## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
AL	C47	Pelletier and Sonenberg, "Internal initiation of translation of eukaryotic mRNA directed by a sequence derived from poliovirus RNA," <i>Nature</i> , 334:320-325, 1988.
	C48	Pompon & Nicolas, "Protein engineering by cDNA recombination in yeasts: shuffling of mammalian cytochrome P-450 functions," <i>Gene</i> , 83:15-24, 1989.
	C49	Pompon et al., "Protein engineering by cDNA recombination in yeasts: shuffling of mammalian cytochrome P-450 functions," <i>Gene</i> , 83:15-24, 1989.
	C50	Potrykus et al., "Direct gene transfer to cells of a graminaceous monocot," <i>Mol. Gen. Genet.</i> , 199:183-188, 1985.
	C51	Rippe et al., "DNA-Mediated Gene Transfer into Adult Rat Hepatocytes in Primary Culture," <i>Mol. Cell Biol.</i> , 10:689-695, 1990.
	C52	Sambrook et al., "Extraction of RNA with Guanidinium Thiocyanate Followed by Centrifugation in Cesium Chloride Solutions," In: <i>Molecular Cloning: A Laboratory Manual</i> , Vol. 1, Cold Spring Harbor Laboratory Press, 7:7.19-17.29, 1989.
	C53	Scheit, <i>Nucleotide Analogs</i> John Wiley & Sons, New York, 1980
	C54	Schulga et al., "An approach to construction of hybrid polypeptide molecules - homologue recombination method," <i>NAR</i> 22:3808-3810, 1994.
	C55	Shao et al., "Random priming in vitro recombination: an effective tool for directed evolution," <i>NAR</i> 26:681-683, 1998.
	C56	Skalski et al., "Removal of Anti-Human Immunodeficiency Virus 2', 3' Dideoxynucleoside Monophosphates from DNA by a Novel Human Cytosolic 3' → 5' Exonuclease," <i>Biochem. Pharmacol.</i> , 50:815-821, 1995.
	C57	Stemmer, "Rapid evolution of a protein <i>in vitro</i> by DNA shuffling," <i>Nature</i> , 370:389-391, 1994.
	C58	Stemmer, "DNA shuffling by random fragmentation and reassembly: <i>In vitro</i> recombination for molecular evolution," <i>PNAS</i> , 91:10747-10751, 1994.
	C59	Vita, "Engineering novel proteins by transfer of active sites to natural scaffolds," <i>Current Opinion in Biotechnology</i> , 8:429-434, 1997.
AL	C60	Weber et al., "Formation of genes coding for hybrid proteins by recombination between related, cloned genes in <i>E. coli</i> ," <i>NAR</i> , 11:5661-5669, 1983.

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## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

Exam. Init.	Ref. Des.	Citation
ad	C61	Wilson C. and Szostak, "In vitro evolution of a self-alkylating ribozyme," <i>J.W. Nature</i> , 374:777-782, 1995.
	C62	Wong et al., "Appearance of a $\beta$ -lactamase activity in animal cells upon liposome-mediated gene transfer," <i>Gene</i> , 10:87-94, 1980.
	C63	Zhao et al., "Optimization of DNA shuffline for high fidelity recombination," <i>NAR</i> , 25:1307-1308, 1997.
AS	C64	Zhao et al., "Molecular evolution by staggered extension process (StEP) in Vitro recombination," <i>Nature Biotechnology</i> , 16:258-261, 1998.

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AS	B11	WO 97/20078	Jun. 5, 1997	PCT			
	B12	WO 98/01581	Jan. 15, 1998	PCT			
	B13	WO 98/41653	Sep. 24, 1998	PCT			
	B14	WO 98/42728	Oct. 1, 1998	PCT			
	B15	WO 98/27230	Jun. 25, 1998	PCT			
	B16	WO 00/42561	Jul. 20, 2000	PCT			
AS	B17	FR 2 782 323	Feb. 18, 2000	France			

## Other Art (Including Author, Title, Date Pertinent Pages, Etc.)

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